

**Amendments to the claims:**

**Cancel claims 6, 16, 21-24, 26, 31-34 and 44-52.**

1. - 6. (Cancelled)

1        7. (Previously Presented) A spin valve transistor comprising:  
2            an emitter;  
3            a collector;  
4            a base between the emitter and the collector;  
5            a spin valve including:  
6                a ferromagnetic free layer structure composed of iron (Fe);  
7                a self-pinned antiparallel (AP) pinned layer structure;  
8                a nonmagnetic spacer layer between the free layer structure and the AP pinned layer  
9                structure; and  
10                the free layer structure interfacing the spacer layer;  
11                the base comprising at least said free layer structure;  
12                the self pinned AP pinned layer structure including:  
13                a ferromagnetic first antiparallel (AP) pinned layer;  
14                a ferromagnetic second antiparallel (AP) pinned layer; and  
15                a nonmagnetic antiparallel coupling (APC) layer located between the first and second  
16                AP pinned layers;  
17                the first AP pinned layer being composed of iron (Fe) and interfacing the spacer layer;  
18                the second AP pinned layer including:  
19                an iron (Fe) film;  
20                a cobalt iron (CoFe) film with a positive magnetostriction;  
21                the iron (Fe) film being located between and interfacing the APC layer and the cobalt  
22                iron (CoFe) film; and  
23                the CoFe film having a magnetostrictive anisotropy field that is oriented  
24                perpendicular to a head surface of the spin valve transistor for self pinning the AP pinned  
25                layer structure.

1                   8. (Original)     A spin valve transistor as claimed in claim 7 wherein the cobalt iron  
2     is  $\text{Co}_{90-50}\text{Fe}_{10-50}$ .

1                   9. (Previously Presented)     A spin valve transistor as claimed in claim 7 wherein the  
2     cobalt iron (CoFe) film is  $\text{Co}_{50}\text{Fe}_{50}$ .

1                   10. (Original)     A spin valve transistor as claimed in claim 9 wherein the first and  
2     second AP pinned layers have the same magnetic thickness.

11. - 16.     (Cancelled)

1                   17. (Previously Presented)     A magnetic head assembly comprising:  
2     a write head;  
3     a read head adjacent the write head;  
4     the read head including:  
5         ferromagnetic first and second shield layers; and  
6         a spin valve transistor located between the first and second shield layers;  
7     the spin valve transistor comprising:  
8         an emitter;  
9         a collector;  
10        a base between the emitter and the collector;  
11        a spin valve including:  
12         a ferromagnetic free layer structure composed of iron (Fe);  
13         a self-pinned antiparallel (AP) pinned layer structure;  
14         a nonmagnetic spacer layer between the free layer structure and the AP pinned  
15        layer structure; and  
16         the free layer structure interfacing the spacer layer;  
17        the base comprising at least said free layer structure;  
18        the self pinned AP pinned layer structure including:  
19         a ferromagnetic first antiparallel (AP) pinned layer;  
20         a ferromagnetic second antiparallel (AP) pinned layer; and

a nonmagnetic antiparallel coupling (APC) layer located between the first and second AP pinned layers;

the first AP pinned layer being composed of iron (Fe) and interfacing the spacer layer; the second AP pinned layer including:

an iron (Fe) film;

a cobalt iron (CoFe) film with a positive magnetostriction;

the iron (Fe) film being located between and interfacing the APC layer and the cobalt iron (CoFe) film; and

the CoFe film having a magnetostrictive anisotropy field that is oriented perpendicular to a head surface of the spin valve transistor for self pinning the AP pinned layer structure.

18. (Previously Presented) A magnetic head assembly as claimed in claim 17 wherein  
balt iron is  $\text{Co}_{90-50}\text{Fe}_{10-50}$ .

19. (Previously Presented) A magnetic head assembly as claimed in claim 17 wherein  
balt iron is  $Co_{50}Fe_{50}$ .

20. (Original) A magnetic head assembly as claimed in claim 19 wherein the first and  
AP pinned layers have the same magnetic thickness.

21.- 26. (Cancelled)

27 (Previously Presented) A magnetic disk drive comprising:

at least one magnetic head assembly that has a head surface:

the magnetic head assembly having a write head and a read head;

the read head including:

ferromagnetic first and second shield layers; and

a spin valve transistor located between the first and second shield layers;

the spin valve transistor comprising:

an emitter;  
a collector;  
a base between the emitter and the collector;  
a spin valve including:  
a ferromagnetic free layer structure composed of iron (Fe);  
a self-pinned antiparallel (AP) pinned layer structure;  
a nonmagnetic spacer layer between the free layer structure and the AP pinned layer structure; and  
the free layer structure interfacing the spacer layer;  
the base comprising at least said free layer structure;  
the self pinned AP pinned layer structure including:  
a ferromagnetic first antiparallel (AP) pinned layer;  
a ferromagnetic second antiparallel (AP) pinned layer; and  
a nonmagnetic antiparallel coupling (APC) layer located between the first and second AP pinned layers;  
the first AP pinned layer being composed of iron (Fe) and interfacing the spacer layer;  
the second AP pinned layer including:  
an iron (Fe) film with a positive magnetostriction;  
a cobalt iron (CoFe) film;  
the iron (Fe) film being located between and interfacing the APC layer and the cobalt iron (CoFe) film; and  
the CoFe film having a magnetostrictive anisotropy field that is oriented perpendicular to a head surface of the spin valve transistor for self pinning the AP pinned layer structure;  
a housing;  
a magnetic medium supported in the housing;  
a support mounted in the housing for supporting the magnetic head assembly with said head facing the magnetic medium so that the magnetic head assembly is in a transducing relationship with the magnetic medium;  
a motor for moving the magnetic medium; and  
a processor connected to the magnetic head assembly and to the motor for exchanging signals with the magnetic head assembly and for controlling movement of the magnetic medium.

1           28. (Original) A magnetic disk drive as claimed in claim 27 wherein the cobalt iron is  
2           Co<sub>90-50</sub>Fe<sub>10-50</sub>.

1           29. (Previously Presented) A magnetic disk drive as claimed in claim 27 wherein the  
2           cobalt iron is Co<sub>50</sub>Fe<sub>50</sub>.

1           30. (Original)     A magnetic disk drive as claimed in claim 29 wherein the first and  
2           second AP pinned layers have the same magnetic thickness.

31. - 34.    (Cancelled)

1           35. (Previously Presented)   A spin valve transistor as claimed in claim 9 wherein the  
2           base further comprises the self-pinned antiparallel (AP) pinned layer structure and the spacer layer.

1           36. (Previously Presented)   A spin valve transistor as claimed in claim 35 further  
2           comprising a barrier layer located between the emitter and the base for conducting hot electrodes  
3           from the emitter to the base wherein the hot electrons have an energy level above Fermi levels of the  
4           layers in said base.

1           37. (Previously Presented)   A spin valve transistor as claimed in claim 36 wherein the  
2           first and second AP pinned layers have the same magnetic thickness.

1           38. (Previously Presented)   A magnetic head assembly as claimed in claim 19 wherein  
2           the base further comprises the self-pinned antiparallel (AP) pinned layer structure and the spacer  
3           layer.

1           39. (Previously Presented)   A magnetic head assembly as claimed in claim 38 further  
2           comprising a barrier layer located between the emitter and the base for conducting hot electrodes  
3           from the emitter to the base wherein the hot electrons have an energy level above Fermi levels of the  
4           layers in said base.

1           40. (Previously Presented) A magnetic head assembly as claimed in claim 39 wherein  
2 the first and second AP pinned layers have the same magnetic thickness.

1           41. (Previously Presented) A magnetic disk drive as claimed in claim 29 wherein the  
2 base further comprises the self-pinned antiparallel (AP) pinned layer structure and the spacer layer.

1           42. (Previously Presented) A magnetic disk drive as claimed in claim 41 further  
2 comprising a barrier layer located between the emitter and the base for conducting hot electrodes  
3 from the emitter to the base wherein the hot electrons have an energy level above Fermi levels of the  
4 layers in said base.

1           43. (Previously Presented) A magnetic disk drive as claimed in claim 42 wherein the  
2 first and second AP pinned layers have the same magnetic thickness.

44. - 52.       (Cancelled)